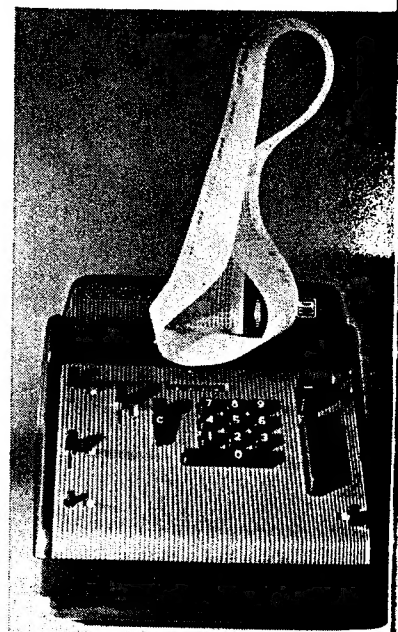




Printing electronic calculator, Monroe's Epic 3000, can be programmed like a computer. Printing feature gives record of calculations done.



Printing calculator by Victor Comptometer stores constant factors.

Tools of the Office

Calculating and Adding Machines

By JOHN MEDLIN, Associate Editor

THE NEW calculators—electromechanical ones as well as electronic—resemble their computer cousins more and more. Manufacturers recently have produced electronic models which can handle programs of 60 or more steps. The new machines also perform automatically several mathematic functions which formerly required operator input at some point during the operation.

Adding machines have not been left behind by the more glamorous calculators. They, in turn, are taking on some calculator features, such as storage capacity.

Among the calculators on the market today, there are three broad divisions—a machine is either electronic, electromechanical or mechanical. The electronics are by far the most sophisticated in their capabilities and operation—one model even performs trigonometric functions—and are always the most

expensive. Only three of the electronic machines listed on *AM*'s latest industry-wide calculator chart on pp. 72-73 are tagged below the thousand-dollar price level. Other calculators—electromechanical and mechanical—fall into three principal categories—rotary, printing or key-drive.

Grey areas in between are occupied by such machines as printing-rotary types and multipliers.

Which of these should the administrative manager buy? This article will serve as an aid by bringing you up to date on the latest developments and features in each category of calculators, adding machines and multipliers.

Generally speaking, electronic calculators are appearing in increasing numbers of offices as their prices decrease. One manufacturer attributes the lower prices to new calculators "pouring in" from Japan.

The electronic printing calculator, this manufacturer feels, is

the "ideal" machine, and he predicts that models will soon be available to administrative managers for less than \$1,000.

Currently, electronic printing calculators, being relatively new, rank near the top of electronic price scales, which range upwards from \$1,000 in most cases. What justifies spending this amount of money for a single desk-top machine?

To begin with, many electronic calculators have two or more registers, giving them a vast superiority in mathematical flexibility over single-register electronics and electromechanicals. Other features of electronics also warrant extra expense, providing, of course, that your company requires such sophisticated machinery to handle its mathematical operations.

Speed is one electronic advantage. Electronics are much faster than other types of calculating machines.

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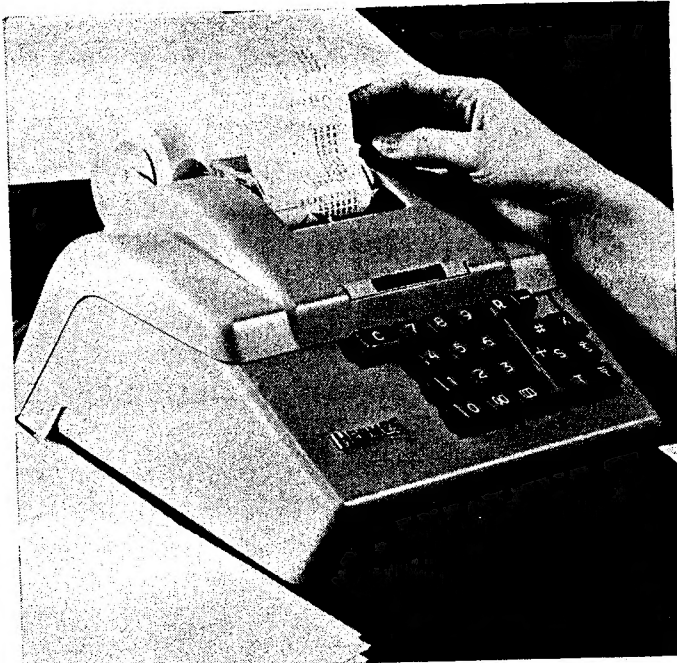
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by Victor Comptometer Company. Adding machine features automatic credit balance and zero-add key. Less than \$140 from Remington.



Multipliers like this Hermes 365 can add, subtract or multiply automatically, although they do not divide.

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an electronic machine, because it has no moving parts to make noise. Only the operator's fingers on the keys can be heard, and some machines require such a light touch that even this sound is negligible. This results in a decrease of operator fatigue, particularly in large, open offices where a number of calculating machines are in constant use.

Ease of operation is another advantage. Even an inexperienced operator can quickly figure out an electronic keyboard and begin to use it. No extensive training is necessary, provided, of course, that the operator is familiar with other types of calculating machines.

Flexibility in a multiple-register electronic calculator opens up a wide range of mathematical operations when the machine is equipped with storage and recall or square root capability.

Electronic printing calculators have all these advantages, plus the fact that all operations are recorded permanently on a paper tape similar to that used on ordinary printing calculators.

One manufacturer's line of these machines features models which can be programmed to carry out a mathematical routine repetitively. The operator need only enter the new figures for each new problem manually.

Another electronic printing calculator, also programmable, performs and prints its calculations in 1.5 seconds or less, according to the manufacturer. Speeds on some of the newer electronic calculators—printing and non-printing—are rather startling. One manufacturer claims his machine can add or

Calculators, adding machines and multipliers each play an important role in the office. New calculators now have computer-like features, such as programming capacity and hard-copy printout. Some adding machines are equipped with devices for storage of constant factors, and a whole range of multipliers are available for the office whose needs fall between the calculator and the adding machine.

subtract in .01 second; multiply in .9 second; obtain a square root in .06 second and divide in one second. Another manufacturer claims .006 second for addition and subtraction, and .1 second for division or multiplication.

Calculating systems can be set up, making use of several calculator keyboards connected to one electronic package. One such modular system provides time

sharing for up to four operator keyboards, a card programmer, 8½-inch page printer, tape program control and paper tape output. The manufacturer says that four-keyboard use of this system brings down the cost of the electronics package to as low as \$620 per user.

Most standard electronic calculators offer a number of features which provide mathematical flexibility and operator convenience. Several of the most frequently encountered include:

Decimal functions. Most electronic machines have automatic, or "floating" decimal placement. Some of them have a key to select the number of decimal places desired and another key to program for rounding off or straight elimination of extra digits. One line of machines features a decimal key along with automatic placement. With one of these models, the operator can enter the decimal as simply another factor in a computation involving elements with various decimal locations.

Memory and recall. These features are complementary. A calculator's memory is used to save a figure for later use or to store constant figures such as constant divisors or multipliers.

Recall functions enable the operator to return constant or

AM's GUIDE TO CALCULATORS

MANUFACTURER OR DISTRIBUTOR	MODEL NAME	PRICE	TYPE (PRINTING, ROTARY, ELECTRONIC, ETC.)	KEYBOARD (FULL, ABBREVED, 10-KEY ETC.)	CAPACITY (NO. OF COLUMNS)	FULLY OR SEMI-AUTOMATIC	STORAGE FACILITIES (YES OR NO)	BACK TRANSFER FEATURE (YES OR NO)	DECIMAL POINT IDENTIFICATION (YES OR NO)	INPUT CARD NO. TO CIRCULAR DATA
ADDO-X, INC.	4653	\$725	Printing	Ten-Key	12/13	Fully automatic	Yes	No	Yes	160
ADDO-X, INC.	4353	\$525	Printing	Ten-Key	12/13	Fully automatic	No	Yes	No	160
ADDO-X, INC.	3653	\$518	Printing	Ten-Key	12/13	Fully automatic	Yes	No	Yes	160
ADDO-X, INC.	3353	\$448	Printing	Ten-Key	12/13	Fully automatic	No	No	Yes	160
ADDO-X, INC.	2353	\$368	Printing	Ten-Key	12/13	Fully automatic	No	No	No	160
ALMA OFFICE MACHINES CORP.	Plurimatic	\$385	Printing	Ten-Key	12/13	Fully automatic	Yes	Yes	No	161
ALMA OFFICE MACHINES CORP.	Packard 'M'	\$299.50	Printing	Ten-Key	11/12	Fully automatic	Yes	Yes	No	161
BOHN BUSINESS MACHINES, INC.	Comtex 30	\$249.50	Rotary	Ten-Key	11	Fully automatic	—	—	Yes	162
BOHN BUSINESS MACHINES, INC.	Comtex 10	\$139.50	Rotary	Ten-Key	11	Semi-automatic	—	—	Yes	162
BURROUGHS CORP.	C1305	\$1,045	Key Drive	Full Keyboard	13/14	—	Yes	No	Yes	163
BURROUGHS CORP.	C1303	\$865	Key Drive	Full Keyboard	9/10	—	Yes	No	Yes	163
BURROUGHS CORP.	C1205	\$765	Key Drive	Full Keyboard	13/14	—	No	No	Yes	163
BURROUGHS CORP.	C1203	\$610	Key Drive	Full Keyboard	9/10	—	No	No	Yes	163
BURROUGHS CORP.	C1103	\$435	Key Drive	Full Keyboard	9/10	—	No	No	Yes	163
BURROUGHS CORP.	J700	\$320	Printing	Ten-Key	10/11	Semi-automatic	No	No	Yes	163
BURROUGHS CORP.	C101	\$195	Key Drive	Full Keyboard	5/6	—	No	No	Yes	163
CANON	167	\$2,150	Electronic	Ten-Key	16	Fully automatic	Yes	Yes	Yes	164
CANON	161	\$1,395	Electronic	Ten-Key	16	Fully automatic	Yes	Yes	Yes	164
CANON	130A	\$1,050	Electronic	Ten-Key	13	Fully automatic	No	Yes	Yes	164
CANON	130	\$1,000	Electronic	Ten-Key	13	Fully automatic	No	Yes	Yes	164
COMMODORE B.M.	402	\$279.95	Ptg. Multiplier	Ten-Key	10/11	Fully automatic	No	Yes	Yes	165
COMMODORE B.M.	202	\$129.95	Printing	Ten-Key	10/11	Fully automatic	No	No	Yes	165
CURTA CO.	#2	\$165	Rotary	Eleven-Key	15	Semi-automatic	Yes	Yes	Yes	166
CURTA CO.	#1	\$125	Rotary	Eight-Key	11	Semi-automatic	Yes	Yes	Yes	166
DERO RESEARCH DEVELOPMENT CORP.	Sage I	\$995	Electronic	Ten-Key	10 L-20 T.	Fully automatic	Yes	No	Yes	167
FACIT-ODHNER, INC.	1122	\$1,395	Electronic	Ten-Key	14	Fully automatic	Yes	Yes	Yes	168
FACIT-ODHNER, INC.	1121	\$1,295	Electronic	Ten-Key	16	Fully automatic	Yes	Yes	Yes	168
FACIT-ODHNER, INC.	CA 2-16	\$785	Rotary	Ten-Key	16	Fully automatic	Yes	Yes	Yes	168
FACIT-ODHNER, INC.	CA 2-165X	\$645	Rotary	Ten-Key	16	Fully automatic	Yes	Yes	Yes	168
FACIT-ODHNER, INC.	CA 1-13	\$525	Rotary	Ten-Key	9/8/13	Fully automatic	Yes	Yes	Yes	168
FACIT-ODHNER, INC.	CM 2-16	\$225	Rotary	Ten-Key	16	Manual	Yes	Yes	Yes	168
FACIT-ODHNER, INC.	CI-13	\$185	Rotary	Ten-Key	13	Manual	Yes	Yes	Yes	168
FRIDEN, INC.	132	\$1,695	Electronic	Ten-Key	13	Fully automatic	Yes	Yes	Yes	169
FRIDEN, INC.	130	\$1,395	Electronic	Ten-Key	13	Fully automatic	Yes	Yes	Yes	169
FRIDEN, INC.	RSR	\$1,195	Rotary	Full/Ten-Key	21	Fully automatic	No	No	Yes	169
FRIDEN, INC.	RSQ	\$1,025	Rotary	Full/Ten-Key	21	Fully automatic	No	No	Yes	169
FRIDEN, INC.	RSC	\$995	Rotary	Full/Ten-Key	20	Fully automatic	No	No	Yes	169
FRIDEN, INC.	RBT	\$975	Rotary	Full/Ten-Key	20	Fully automatic	No	Yes	Yes	169
FRIDEN, INC.	STW-10	\$880	Rotary	Full/Ten-Key	20	Fully automatic	No	No	Yes	169
FRIDEN, INC.	SW-10	\$730	Rotary	Full/Ten-Key	20	Fully automatic	No	No	Yes	169
FRIDEN, INC.	1217	\$695	Printing	Ten-Key	13	Fully automatic	Yes	Yes	Yes	169
FRIDEN, INC.	CW-10	\$535	Rotary	Full Keyboard	20	Semi-automatic	No	No	Yes	169
ITC	Anita Mark IX	\$990	Electronic	Full Keyboard	10x10	Fully automatic	No	Yes	Yes	170
ITC	Anita Mark VIII	\$690	Electronic	Full Keyboard	10x10	Fully automatic	Yes	No	Yes	170

Information on calculators from most of the manufacturers in the United States is shown on these charts.

Tools CONTINUED

repeat factors to the current computation by pressing a "recall" key, thus eliminating manual re-entry.

One machine contains three memories and provides flexible transfer of any number from one memory to another or from one register to another. Another calculator, recently introduced, has no less than eight memories including one for storage of intermediate answers or factors, two accumulating storage registers, two separate registers for storage of constant figures, and a "bonus" memory holding a constant which can be used as the first factor in any operation.

Operator conveniences on electronics are growing more numerous. Display windows on the machines—usually rectangular, cathode tube screens similar to television or narrow, illuminated windows accommodating one row of figures—provide optimal screen-digit contrast to prevent eyestrain. Some models using the single-row window feature figures over half an inch high.

Many viewing windows also include the correct sign, indicating whether the figure is positive or negative. One new machine, which uses a four-row cathode tube screen, prints zeros half-size for quick read-out.

Several of the newer models include what manufacturers call a "fail-safe" factor. When the

capacity of the register is exceeded, a warning light on the register shows. The machine then will not operate until it has been cleared.

Other operator considerations are taken into account in the over-all design. One manufacturer's keyboard is tilted at the optimum angle for maximum ease in use; another's is designed to place all operating keys within easy reach of the fingers of one hand and to permit use of the keyboard without the necessity of "crossing over."

Leaving the electronic machines, we move into the diverse area of the electromechanical and mechanical ones. The most sophisticated of these calculators are the rotaries.

AM's GUIDE TO CALCULATORS

DECIMAL POINT IDENTIFICATION (YES OR NO)	INQUIRY CARD NO. TO CIRCLE FOR MORE DATA	MANUFACTURER OR DISTRIBUTOR	MODEL NAME	PRICE	TYPE (PRINTING, ROTARY, ELECTRONIC, ETC.)	KEYBOARD (FULL, ABRIDGED, 10-KEY, ETC.)	CAPACITY (NO. OF COLUMNS)	FULLY OR SEMI-AUTOMATIC	STORAGE FACILITIES (YES OR NO)	BACK TRANSFER FEATURE (YES OR NO)	DECIMAL POINT IDENTIFICATION (YES OR NO)	INQUIRY CARD NO. TO CIRCLE FOR MORE DATA
Yes	166	THE INTERNATIONAL, INC.	EPIC 3000	\$2,750	Electronic	Ten-Key	16	Fully automatic	Yes	Yes	Yes	171
No	166	THE INTERNATIONAL, INC.	EPIC 2000	\$2,250	Electronic	Ten-Key	16	Fully automatic	Yes	Yes	Yes	171
Yes	166	THE INTERNATIONAL, INC.	PC 1421	\$1,175	Rotary/Ptg.	Ten-Key	21	Fully automatic	Yes	Yes	Yes	171
Yes	166	THE INTERNATIONAL, INC.	IQ-213	\$995	Rotary	Full Keyboard	21	Fully automatic	Yes	Yes	Yes	171
No	166	THE INTERNATIONAL, INC.	8F-213	\$875	Rotary	Full Keyboard	21	Fully automatic	Yes	No	Yes	171
No	161	THE INTERNATIONAL, INC.	6F-212	\$825	Rotary	Full Keyboard	21	Fully automatic	Yes	No	Yes	171
No	161	THE INTERNATIONAL, INC.	CSA-10	\$690	Rotary	Full Keyboard	21	Fully automatic	Yes	No	Yes	171
Yes	163	THE INTERNATIONAL, INC.	Mach 1.07	\$655	Printing	Ten-Key	15	Fully automatic	Yes	Yes	No	171
Yes	163	THE INTERNATIONAL, INC.	011K116	\$555	Printing	Ten-Key	15	Fully automatic	Yes	No	Yes	171
Yes	163	THE INTERNATIONAL, INC.	4F4-212	\$530	Rotary	Full Keyboard	21	Semi-automatic	Yes	No	Yes	171
Yes	163	THE INTERNATIONAL, INC.	3F3-162	\$475	Rotary	Full Keyboard	16	Semi-automatic	Yes	No	Yes	171
Yes	163	THE INTERNATIONAL, INC.	M-24GT	\$560	Printing	Ten-Key	12/13	Fully automatic	Yes	Yes	Yes	172
Yes	163	THE INTERNATIONAL, INC.	M-24	\$425	Printing	Ten-Key	12/13	Fully automatic	Yes	Yes	Yes	172
Yes	163	THE INTERNATIONAL, INC.	M-20	\$346	Printing	Ten-Key	10/11	Fully automatic	No	No	Yes	172
Yes	163	THE INTERNATIONAL, INC.	101	\$3,850	Electronic	Ten-Key	22	Fully automatic	Yes	Yes	Yes	172
Yes	163	THE INTERNATIONAL, INC.	TET	\$875	Printing	Ten-Key	12/13	Fully automatic	Yes	Yes	Yes	172
Yes	163	THE INTERNATIONAL, INC.	D24 GT	\$725	Printing	Ten-Key	12/13	Fully automatic	Yes	Yes	Yes	172
Yes	163	THE INTERNATIONAL, INC.	D24	\$625	Printing	Ten-Key	12/13	Fully automatic	Yes	Yes	Yes	172
Yes	164	HILLARD, INC.	165	\$470	Printing	Ten-Key	12/13	Fully automatic	Yes	Yes	Yes	173
Yes	164	HILLARD, INC.	365	\$395	Printing	Ten-Key	12/13	Fully automatic	No	No	Yes	173
Yes	165	WINSTON OFFICE MACHINES	DM 99120	\$675	Printing	Ten-Key	13/14	Fully automatic	—	—	Yes	174
Yes	165	WINSTON OFFICE MACHINES	DM 99120	\$599.50	Printing	Ten-Key	11/12	Fully automatic	—	—	Yes	174
Yes	166	WINSTON OFFICE MACHINES	DX 94	\$399.50	Printing	Ten-Key	10	Semi-automatic	No	No	No	174
Yes	166	WINSTON OFFICE MACHINES	104	\$750	Printing	Ten-Key	16/17	Fully automatic	Yes	Yes	Yes	174
Yes	167	ZEN CORP.	Cogito 566 PR	\$2,800	Electronic/Ptg.	Ten-Key	16	Fully automatic	Yes	Yes	Yes	175
Yes	168	ZEN CORP.	Cogito 240 SR	\$1,895	Electronic	Ten-Key	24	Fully automatic	Yes	Yes	Yes	175
Yes	168	ZEN CORP.	416-S	\$1,185	Rotary/Ptg.	Ten-Key	16	Fully automatic	Yes	Yes	Yes	175
Yes	168	ZEN CORP.	316-A	\$985	Rotary/Ptg.	Ten-Key	16	Fully automatic	Yes	Yes	Yes	175
Yes	168	ZEN CORP.	10 CMA	\$895	Rotary	Full Keyboard	20	Fully automatic	No	No	Yes	175
Yes	168	ZEN CORP.	ABL	\$865	Rotary	Full Keyboard	20	Fully automatic	No	No	Yes	175
Yes	168	ZEN CORP.	8 CMA	\$835	Rotary	Full Keyboard	16	Fully automatic	No	No	Yes	175
Yes	168	ZEN CORP.	10 LCM	\$805	Rotary	Full Keyboard	20	Fully automatic	No	No	Yes	175
Yes	168	ZEN CORP.	10 CM	\$755	Rotary	Full Keyboard	20	Fully automatic	No	No	Yes	175
Yes	169	ZEN CORP.	8 LCM	\$745	Rotary	Full Keyboard	16	Fully automatic	No	No	Yes	175
Yes	169	ZEN CORP.	8 CM	\$695	Rotary	Full Keyboard	16	Fully automatic	No	No	Yes	175
Yes	169	ZEN CORP.	505-X	\$635	Rotary	Ten-Key	16	Fully automatic	No	Yes	Yes	175
Yes	169	ZEN CORP.	8 CDT	\$475	Rotary	Full Keyboard	16	Semi-automatic	No	No	Yes	175
Yes	169	ACTOR COMPUTOMETER CORP.	Custom 72-85-54	\$346	Printing	Ten-Key	11	Fully automatic	No	No	Yes	176
Yes	169	ACTOR COMPUTOMETER CORP.	12D	\$995	Key Drive	Full	13	Semi-automatic	Yes	No	Yes	176
Yes	169	ACTOR COMPUTOMETER CORP.	9D	\$865	Key Drive	Full	10	Semi-automatic	Yes	No	Yes	176
Yes	169	ACTOR COMPUTOMETER CORP.	Premier 79-88-54	\$635	Printing	Ten-Key	14	Fully automatic	Yes	No	Yes	176
Yes	169	ACTOR COMPUTOMETER CORP.	Custom 75-85-54	\$570	Printing	Ten-Key	11	Fully automatic	Yes	No	Yes	176
Yes	169	ACTOR COMPUTOMETER CORP.	Premier 77-88-54	\$560	Printing	Ten-Key	11	Fully automatic	No	No	Yes	176
Yes	170	ACTOR COMPUTOMETER CORP.	12 MGT	\$560	Printing	Ten-Key	12	Fully automatic	Yes	No	Yes	176
Yes	170	ACTOR COMPUTOMETER CORP.	Custom 73-85-54	\$495	Printing	Ten-Key	11	Fully automatic	No	No	Yes	176
Yes	170	ACTOR COMPUTOMETER CORP.	12 ML	\$445	Printing	Ten-Key	12	Fully automatic	No	No	Yes	176
Yes	177	WANG LABORATORIES, INC.	320	\$2,095	Electronic	Ten-Key	10	Fully automatic	Yes	Yes	Yes	177
Yes	177	WANG LABORATORIES, INC.	310	\$1,895	Electronic	Ten-Key	10	Fully automatic	Yes	Yes	Yes	177
Yes	177	WANG LABORATORIES, INC.	300	\$1,690	Electronic	Ten-Key	10	Fully automatic	Yes	Yes	Yes	177
Yes	177	WANG LABORATORIES, INC.	320S	\$5,130	Electronic	Ten-Key	10	Fully automatic	Yes	Yes	Yes	177
Yes	177	WANG LABORATORIES, INC.	310S	\$4,710	Electronic	Ten-Key	10	Fully automatic	Yes	Yes	Yes	177
Yes	177	WANG LABORATORIES, INC.	300S	\$4,280	Electronic	Ten-Key	10	Fully automatic	Yes	Yes	Yes	177
Yes	177	WANG LABORATORIES, INC.	370	\$3,240	Electronic	Ten-Key	10	Fully automatic	Yes	Yes	Yes	177
Yes	177	WANG LABORATORIES, INC.	360	\$2,495	Electronic	Ten-Key	10	Fully automatic	Yes	Yes	Yes	177

Dashes indicate information unavailable at press time. Adding machine information is not included in the charts.

Some of these machines, which average several hundred dollars in cost, are equipped with compact, ten-key keyboards. Others have full keyboards, containing as many columns of keys as the machine's register capacity, less one. While full keyboard machines are bulkier than ten-key models, they offer a savings in time, because the operator can enter all the digits of a figure at one time. Each must be entered separately on a ten-key machine, since there is only one key

for each digit, rather than several.

Rotaries operate on a principle of circular dials upon which figures appear. Depressing a key activates a particular dial, which spins until the correct digit appears in the register window. These machines may be either electric or entirely manual. On the manual models, such functions as totaling or clearing are carried out by movements of levers rather than pressing of keys.

Many rotaries have features similar to those of electronics, such as multiple registers and storage facilities. Back transfer, a handy feature in multiple-factor multiplication, is offered on most of them. For instance, if the operator wishes to multiply 12x13x14, she enters the first two figures on the keyboard and the product appears in one register. She then enters the third factor and presses two operation keys. The first product is automatically transferred to the first reg-

Tools . . . Printing-rotary machines offer new convenience CONTINUED

ister and multiplied by the third factor.

Decimal point location on rotaries must be done manually. Usually, there is a small, movable device located above each register, which the operator places at the appropriate location to indicate the decimal.

Many rotaries feature fully

automatic multiplication and division. One manufacturer's line offers "short-cut" multiplication which is claimed to save up to 40 percent of the operator's time. On these machines, each dial is capable of rotating in either direction from zero, so that entered numbers register more quickly.

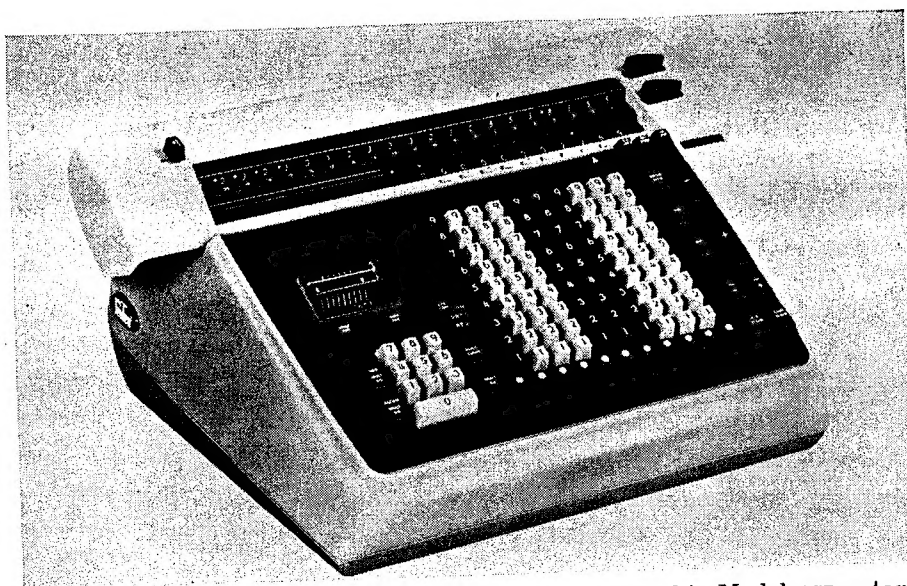
Color coding is featured in

some rotary machines. One model has the number keys and the basic arithmetical function keys colored black, while keys for more complicated operations and short cuts are ivory.

Keyboards on fully manual rotaries are far simpler in appearance than those of electronic models. One model contains only the ten digit keys and four operational keys. An additional four levers on the side of the machine provide other functions, such as clearing or transfer from one register to another. Another machine has only three levers and thirteen keys. Unlike most other calculators, this telephone-size rotary has a keyboard in typewriter style, rather than the usual three-by-three arrangement found on other ten-machine.



This NCR adding machine typifies the newer models, all of which are efficient tools for the office with routine mathematical requirements.



Automatic extraction of square roots is a feature of this Model RSR rotary calculator by Friden, one of a series of four new rotary machines.

MINIATURE

ONE interesting entry in the range of rotaries is a pocket-sized machine weighing only eight ounces. Setting knobs around its cylindrical side, where operational results can be seen around the top of the cylinder, provide an operating handle, clearing knob and decimal marker are also located on top of the machine.

Despite its size, this calculator performs all four arithmetic functions, squares, cubes, extracts square roots, does cumulative multiplication, computes percentages and most other operations available on standard models.

A few machines on the market today are classified as printing calculators. As the name implies, these are rotary machines which also provide a record of the operation on paper. This eliminates the chief disadvantage of standard rotary machines—the fact that there is no record of the operation, only the answer. And even this can be copied down, with the attendant risk of error.

One typical machine of this type is promoted as three machines in one—a rotary calculator and two adding machines.

Tools CONTINUED



Optional card programmer to the left of this Wang 320 electronic calculator enables the machine to perform complex operations automatically.



This electronic calculator by Toshiba features direct percentage calculation and either preset or manual decimal point entry for each digit.



Two sets of cumulative memories and five sets of constant memories are contained in the fifteen-column Canon 167 electronic calculator.

derives from the fact that either of the two storage registers in the machine can operate independently as an adding machine, if necessary.

This machine also incorporates additional features which are standard equipment on electronics. Automatic decimals are printed on the paper tape in both factors and results of all operations, and in multiplication, answers are automatically rounded to tenths, hundredths or thousandths. As on many electronics, extra keys are furnished for entry of two or three zeros with one key-stroke. A non-add key permits entry of figures for identification purposes. Such figures remain independent of whatever mathematical operation that is being carried out at the time.

Similar to rotaries, key-driven calculators also show factors and results on dials. These are always of full keyboard design, and are therefore most suitable for high-volume addition and subtraction.

Printing calculators, on the average the least expensive of the calculator family, are developing some features of the more complicated machines. Some new models offer such operations as electrified total transfer, which automatically reprints results of an operation for use in a subsequent operation, or double and triple zero keys.

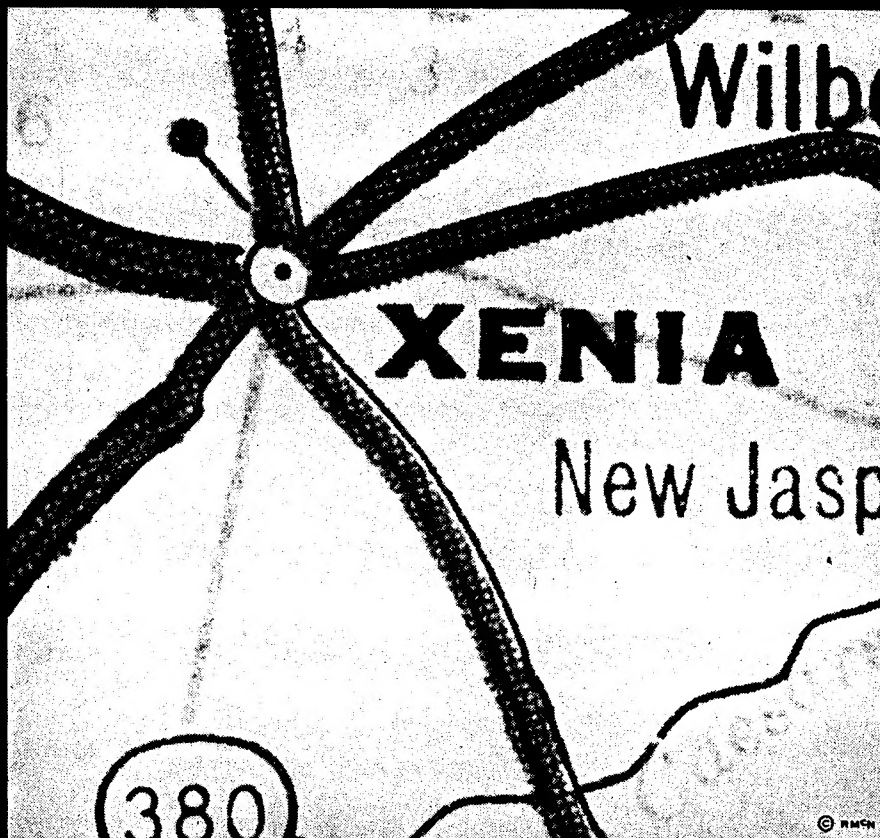
Most machines in this line feature red and black printing, and automatically record all negative answers in red.

RECORD

ESSENTIALLY, a printing calculator is an adding machine which multiplies and divides. Although slower than either electronic or rotary machines, printers have the advantage of providing a visible record of all entered factors and results. Many of these calculators also record the sign of the arithmetic function performed.

Multipliers make up the final category of calculators. Unlike other calculators, these machines do not have the capability for

Where are you located? So is Victor.

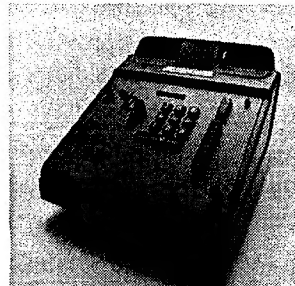


We have a representative covering every county of every state in the country; factory branches in 82 cities, and hundreds—literally hundreds—of sales and service representatives.

We have to. Because we're not merely the country's largest manufacturer of figuring machines. We also maintain the only nationwide temporary help service that is not franchised (and we train our temporary girls on figuring machines, not just on typewriters!); we have a handwritten communications system called Electrowriter, that sends handwriting as far and as fast as telephones send your voice; new high-speed cash registers for supermarkets and new low-priced adding machines for home use.

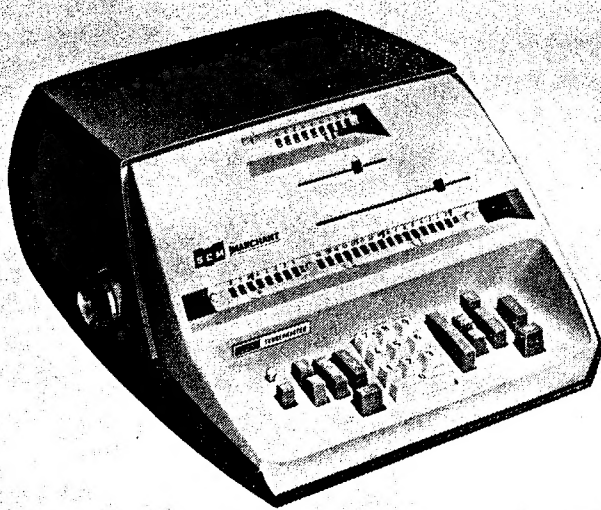
Just tell us what you need; we can be there when you need us with what you need us for. Victor Comptometer Corporation, Business Machines Group, Chicago, Illinois 60618.

**Call on Victor
and you're in business.**

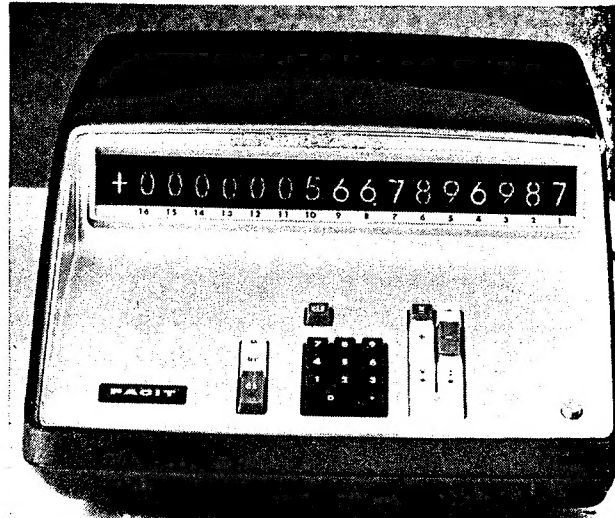


VICTOR CALCULATORS • ADDING MACHINES • CASH REGISTERS • TEMPORARY HELP • ELECTROWRITER COMMUNICATIONS

(Circle No. 51 on Reader Inquiry Card)



Three registers in the SCM Tenkeymaster 505 rotary calculator keep all operating factors visible for checks.



This electronic model, the Facit 1121, can perform any arithmetic operation in one tenth of a second or less.

Tools CONTINUED

division, although they do perform automatic multiplication; hence the name.

Most models available are of the rotary-printing type. That is,

figures appear both on dials and on paper tape, which may be kept as a record of the mathematical operation.

Typical multipliers are priced below \$500, and can be regarded by potential users either as limited calculators or super add-

ing machines. A typical model offers features such as automatic positive and negative multiplication and automatic credit balance. Negative or debit figures are automatically printed in red, reducing chances for error in copying or other off-machine work.

Extra features offered on one manufacturer's model provide several safety devices. This machine cannot operate until a problem has been completed, and it will not exceed its multiplication capacity, which is twelve digits.

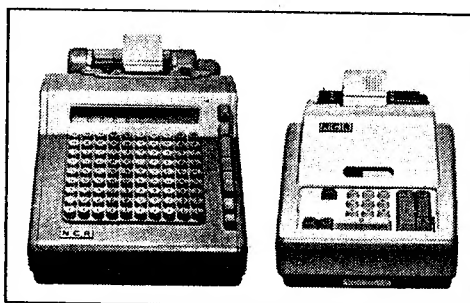
SIMPLE

LIKE most calculators, multipliers are simple to operate. A representative model requires no more than three minutes of training time, according to the manufacturer.

Some machines permit operations to be interrupted and resumed. For instance, a long series of sums can be stopped for a multiplication operation, and then carried on to completion.

Memory or storage devices of varied capabilities are offered on many multiplier models. One machine automatically stores a positive and negative product in a series, thus enabling the operator to obtain a grand total by pressing only one key. A "magnetic memory register" on this machine also permits storage and

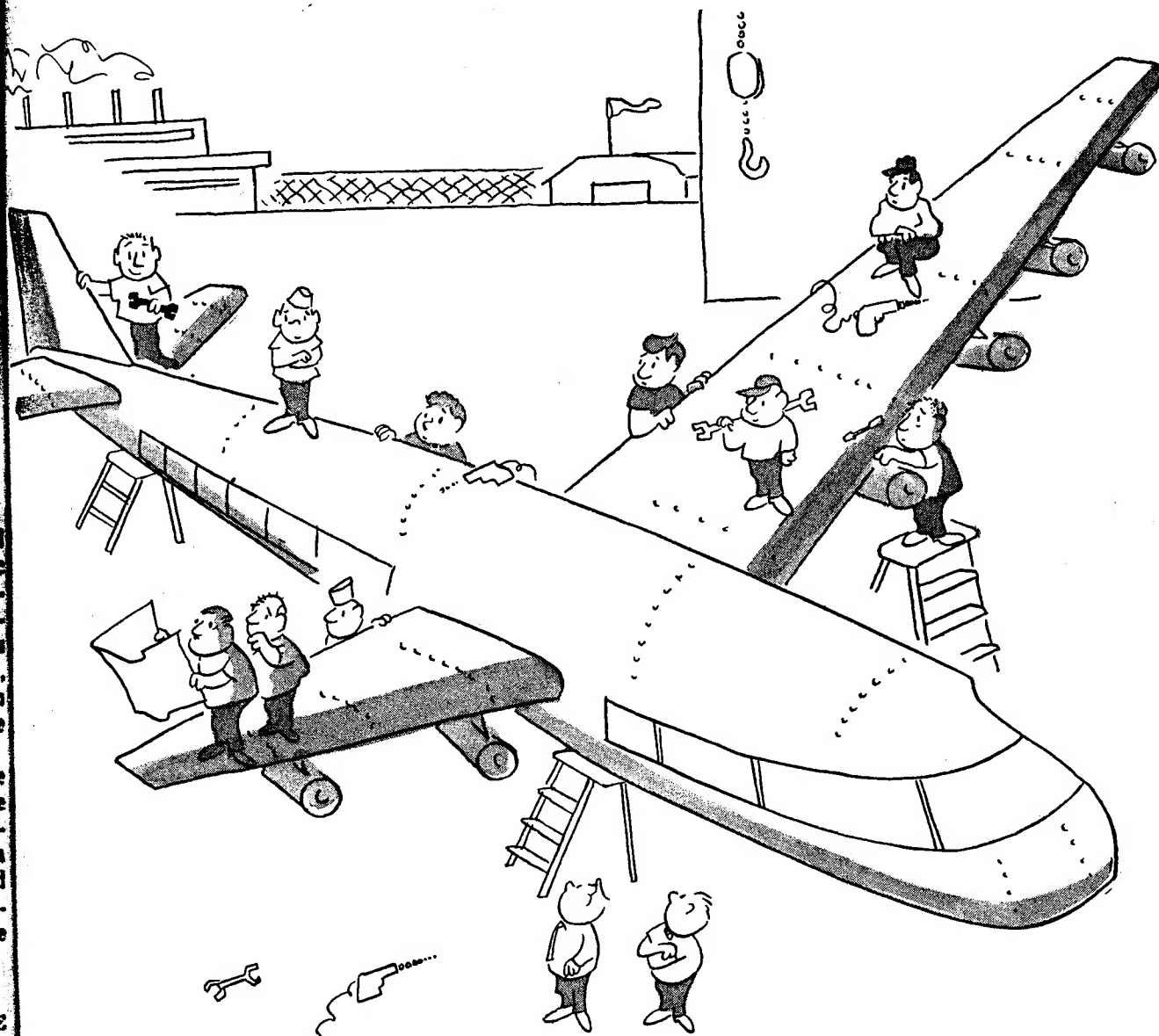
Add infinitum.



NCR

THE NATIONAL CASH REGISTER CO., DAYTON, 45409 ®

(Circle No. 55 on Reader Inquiry Card)



Get it right the first time with a Marchant Calculator!



What makes Marchant® Calculators mistake-proof? We call it Surecheck.

It means that every Marchant shows the answer *and step-by-step how you got there*.

One Marchant prints out your mathematical operations on a wide, easy-to-read paper tape. Another shows problem parts on big, legible dials. Still another registers factors on a bright electronic screen.

No need to re-enter and re-work a problem to be sure you're right. You can Surecheck on answer just by looking. If you've entered the right numbers—you've got the right answer.

Which Marchant calculator is the one for you? Your Marchant representative will be happy to show you them all.

Call him today for an on the job demonstration, without obligation.

Marchant makes you a better calculator.

SCM CORPORATION, 410 Park Avenue, New York, N. Y. 10022. Offices in Canada and major cities throughout the world.



(Circle No. 52 on Reader Inquiry Card)

We'll turn any employee into an electronic calculator expert in one minute flat. That's how easy it is to learn to operate a Canon.

These totally reliable desk-top calculators do everything. Easily. They add, subtract, multiply, divide, figure mark-up and mark-down . . . you name it. And they do it in split-seconds. Without making a sound. What's more, the results appear in big, easy-to-read illuminated numerals $\frac{5}{8}$ " high. And best of all, world-famous Canon calculators cost little more than yesterday's outmoded rotary machines.

If you're thinking about calculators, the only real question you need ask is which Canon is right for your requirements. Both are unconditionally guaranteed for a full year.

Canon 161. Newest model, with 16 digit capacity. Two flexible memory banks accumulate data for all mathematical functions. Automatic overload signal warns when amount entered exceeds keyboard or memory capacity. Completely automatic decimal system.

Canon 130. World's most popular desk-top electronic calculator. With 13-digit capacity, flexible memory bank, automatic decimal system.

Mail the coupon today for literature and a free demonstration in your office. Naturally, there's no obligation.



Now anyone in your office can be the swift, silent, calculating type.

All it takes is a new Canon.

Canon
ELECTRONIC CALCULATORS

CANON U.S.A., INC.
550 Fifth Avenue
New York, N.Y. 10036

☐ Please arrange a demonstration of the Canon Electronic Calculator, in my office.

☐ No demonstration, please. I want to read more about it first. Send descriptive literature.

Name _____

Company _____

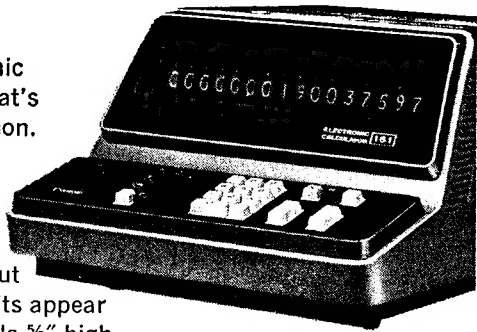
Address _____

City _____

State _____

Zip _____

Phone _____



Tools CONTINUED

recall of individual figures or answers to any problem.

REPEAT

ADDING machines still play an important part in the many offices whose calculating needs do not exceed addition or subtraction. Although multiplication and division can be performed with an adding machine, they are cumbersome and time-consuming procedures, involving repeated addition for multiplication and repeated subtraction for division operations.

There are mathematical problems which crop up in almost any kind of office which, although tedious and time-consuming, are not particularly complicated. The adding machine, with its basic arithmetic functions, can be a tool of immense value in such an office, simply as a time saver.

The new machines, much less expensive than calculators, also offer several sophisticated capabilities in addition to their many functions of adding and subtracting. Repeat keys make the multiplication process much easier, as its use allows the operator to enter the multiplicand only once.

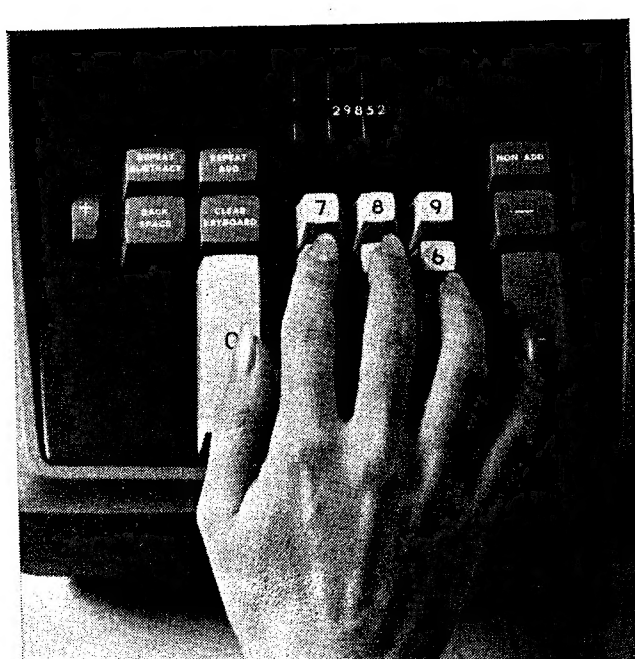
Storage of a sort can be achieved with the repeat key as well, on one manufacturer's model. Another model has a more sophisticated storage system. The repeat-recall feature returns the last-printed number to operations simply by pressing the add or subtract bar. This machine also has an accumulator which



New adding machine, the ITC 10, totals eleven columns.

(Circle No. 53 on Reader Inquiry Card)

They were made for each other.



The Friden "Natural Way" Keyboard and the human hand.

Notice how this patented keyboard fits the girl's hand like a glove. The keys are oversized for fingertip comfort.

The zero bar is L-shaped, so you don't have to contort the hand.

Why are these features so important? Ask any adding machine operator about "adding machine cramp."

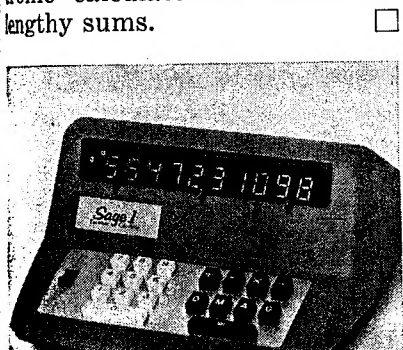
It's the fatigue that builds up from hour

after hour at an ordinary keyboard.

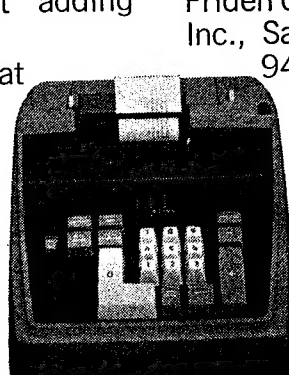
Only one keyboard is built to eliminate "adding machine cramp." Only one 10-key adder—the Friden AFY—has this keyboard.

See the AFY Adding Machine with the exclusive "Natural Way" keyboard and 25 other major features. Call your Friden office. Or write Friden, Inc., San Leandro, California

94577. Sales and service throughout the world.



One electronic which sells for less than \$1,000 is the Sage I by Dero.



(Circle No. 54 on Reader Inquiry Card)

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OCTOBER 1967